



---

## MANAGEMENT INFORMATION

---

This assessment consists of **ONE** scenario based question worth 20 marks and **32** short questions each worth 2.5 marks.

At least **55** marks are required to pass this assessment.

**Numeric entry fields**

Enter whole numbers only

Numbers may be entered with or without a thousand separator (use commas only)

Negative numbers can be entered with a preceding minus sign or enclosed in brackets

You have **90** minutes to complete the assessment which includes any review period.

This paper will be assessed by computer-based assessment from 1 January 2016.

VanHeusen plc has two production departments (Assembly and Finishing) and two service departments (Stores and Maintenance). Its budgeted overheads for the next quarter (July to September) are as follows:

	£
Rent and rates	80,000
Plant depreciation	100,000
Light and heat	50,000
Canteen costs	85,000
Finishing costs	32,000

These overheads are to be allocated and apportioned as fairly as possible to the four departments using the information contained in the table below.

	Assembly	Finishing	Stores	Maintenance
Plant cost (£)	25,000	60,000	7,500	7,500
Number of employees	10	20	10	10
Floor area (m <sup>2</sup> )	2,000	4,000	3,000	1,000

**Allocate and apportion the budgeted overheads to the four departments:**

	Assembly £	Finishing £	Stores £	Maintenance £
Rent and rates	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Plant depreciation	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Light and heat	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Canteen costs	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Finishing costs	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

In the following quarter (October to December) VanHeusen's accountant has already completed the initial allocation and apportionment of budgeted overheads to the four departments and now wishes to reapportion the service department overheads to the production departments. He has provided the following information:

	Assembly	Finishing	Stores	Maintenance
Total overhead (£)	70,000	185,000	65,000	38,000
Plant cost (£)	25,000	60,000	7,500	7,500
Number of employees	10	20	10	10
Floor area (m <sup>2</sup> )	2,000	4,000	3,000	1,000

Stores works 50% of the time for Assembly, 30% for Maintenance and the balance for Finishing. Its costs should be reapportioned first. Maintenance looks after the plant in each department.

**Reapportion the service department overheads (Stores and Maintenance) to the production departments (Assembly and Finishing):**

	<b>Assembly £</b>	<b>Finishing £</b>	<b>Stores £</b>	<b>Maintenance £</b>
Total overhead	<b>70,000</b>	<b>185,000</b>	<b>65,000</b>	<b>38,000</b>
Stores reapportionment				
Revised total overheads (enter figures in all 4 boxes)				
Maintenance reapportionment				
Revised total overheads (enter figures in all 4 boxes)				

In the next quarter (January to March) the budgeted overhead in Finishing was £243,000 and the budgeted labour hours were 20,250. The budgeted overhead absorption rate was £8 per machine hour in Assembly based on budgeted labour hours of 15,000. In fact 15,876 hours were actually worked.

**Calculate the budgeted overhead absorption rate per labour hour in Finishing:**

£

**Calculate the under or over absorption of overheads in Assembly:**

£  Use the drop down to select from:

Under absorption
Over absorption

1. Adam is responsible for preparing a monthly analysis of total department costs for the Managing Director of XYZ. Adam's boss, the Department Manager, has asked Adam to exclude a number of costs from the monthly analysis to 'give a better impression' of the department, and has threatened to commence disciplinary proceedings against Adam for poor work if he fails to do so.

Which threat does this represent?

- A. Familiarity  
B. Self-interest  
C. Intimidation  
D. Self-review
2. F and G are two divisions of a company. Division F manufactures one product, Rex. Unit production cost and the market price are as follows:

	£
Variable materials	24
Labour	16
Variable fixed overhead	8
	<u>48</u>
Prevailing market price	64

Product Rex is sold outside the company in a perfectly competitive market and also to division G. If sold outside the company, Rex incurs variable selling costs of £8 per unit.

Assuming that the total demand for Rex is more than sufficient for division F to manufacture to capacity, select the price per unit (in round £s) at which the company would prefer division F to transfer Rex to division G.

- A. £64  
B. £56  
C. £40  
D. £48
3. A company has recorded the following costs over the last six months.

Month	Total cost £	Units produced
1	74,000	3,000
2	72,750	1,750
3	73,250	2,000
4	75,000	2,500
5	69,500	1,500
6	72,750	2,000

Using the high-low method, which of the following represents the total cost equation?

- A. Total cost = 61,250 + (1.25 x quantity)  
B. Total cost = 65,000 + (3 x quantity)  
C. Total cost = 65,000 + (1.25 x quantity)  
D. Total cost = 61,250 + (3 x quantity)

4. Which **TWO** of the following statements about budgeting are correct?
- A. A forecast is an attempt to predict what will happen
  - B. A budget is a plan of what is intended to happen
  - C. All budgets are prepared in financial terms
  - D. The master budget consists of a budgeted income statement and a budgeted balance sheet
  - E. A flexible budget adjusts both fixed and variable costs for the level of activity
5. A firm that uses zero-based budgeting for its overheads has:
- A. Zero as the starting point for budgeting the coming year's overheads
  - B. A zero variance between budgeted and actual overhead
  - C. An assumed sales level of zero as the starting point for budgeting the coming year's overheads
  - D. An overhead budget of zero
6. The high-low method of cost estimation is useful for:
- A. Calculating the budgeted cost for the actual activity
  - B. Calculating the highest and lowest costs in the budget period
  - C. Measuring the actual cost for the budgeted activity
  - D. Predicting the range of costs expected in the budget period
7. An extract from next year's budget for a manufacturing company is shown below.

	<i>Month 3</i>	<i>Month 4</i>
	£	£
Closing inventory of raw materials	22,000	12,000

The manufacturing cost of production is £116,000 in both month 3 and month 4.  
Materials costs represent 40% of manufacturing cost.

Select the budgeted material purchases for month 4 from the list below.

- A. £36,400
- B. £42,400
- C. £46,400
- D. £56,400

8. You are given the following budgeted cost information for Verlaine plc for January.

Sales	£120,000
Unit selling price	£2
Gross profit	30% margin on sales
Opening inventory	6,000 units

Sales volumes are increasing at 20% per month and company policy is to maintain 10% of next month's sales volume as closing inventory.

The budgeted cost of production for January is:

- A. £84,000  
B. £85,680  
C. £120,000  
D. £122,400
9. A company's cash budget highlights a short-term surplus in the near future.
- Which **TWO** of the following actions would **not** be appropriate to make use of the surplus?
- A. Increase inventories and receivables to improve customer service.  
B. Buy back the company's shares.  
C. Increase payables by delaying payments to suppliers.  
D. Invest in a short term deposit account.
10. A retailing company's current assets and current liabilities comprise inventory at cost £2,100, receivables, cash and trade payables. Its financial ratios include the following:

Quick (liquidity) ratio	2:1
Rate of inventory turnover	10 times p.a.
Gross profit margin	30%
Receivables collection period	1 month
Payables payment period	1.6 months

The opening inventory, receivables and payables balances are the same as the closing balances.

The closing cash in hand balance will be:

- A. £3,100  
B. £2,170  
C. £1,000  
D. £100

11. A retail company extracts the following information from its accounts at 30 June 20X6:

	£
Average inventory	490,000
Average receivables	610,000
Average payables	340,000
Cost of sales	4,500,000
Purchases	4,660,000
Gross profit margin	32%

The number of days in the company's cash operating cycle is

- A. 34 days
- B. 44 days
- C. 47 days
- D. 51 days

12. Total usage of one item of Archer Ltd's inventory for the next month is estimated to be 100,000 units. The costs incurred each time an order is placed are £180. The carrying cost per unit of the item each month is estimated at £2. The purchase price of each unit is £4. The economic order quantity formula is:

$$\sqrt{(2cd)/h}$$

When using this formula to find the optimal quantity to be ordered, identify the amounts that are included in the calculation.

Cost per order (£180)

- A. Included
- B. Not included

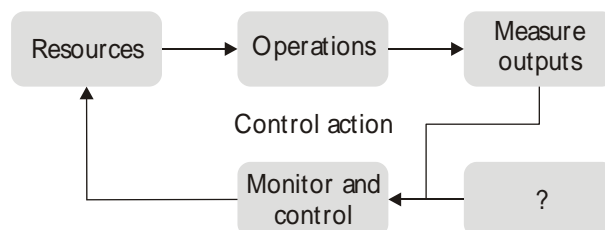
Carrying cost per unit per month (£2)

- C. Included
- D. Not included

Purchase price per unit (£4)

- E. Included
- F. Not included

13. Shown below is a diagram of a simple control cycle. What should appear in the box marked '??'



- A. Feedback
- B. Fixed costs
- C. Activity levels
- D. Budgets and standards

14. Which of the following is not a feature of effective feedback reports?

- A. Made available in a timely fashion.
- B. Produced on a regular basis.
- C. Distributed to as many managers as possible.
- D. Sufficiently accurate for the purpose intended.

**The following information relates to questions 15 and 16**

Telgar plc uses a standard costing system, with its material inventory account being maintained at standard cost. The following details have been extracted from the standard cost card in respect of materials.

8 kg @ £0.80/kg = £6.40 per unit  
Budgeted production in April was 850 units.

The following details relate to actual materials purchased and issued to production during April when actual production was 870 units.

Materials purchased	8,200 kg costing £6,888
Materials issued to production	7,150 kg

15. The material price variance for April was:

- A. £286 adverse
- B. £286 favourable
- C. £328 adverse
- D. £328 favourable

16. The material usage variance for April was:

- A. £152.00 favourable
- B. £152.00 adverse
- C. £159.60 adverse
- D. £280.00 adverse



17. A company manufactures a single product and has drawn up the following flexed budget for the year.

	60%	70%	80%
	£	£	£
Variable materials	120,000	140,000	160,000
Variable labour	90,000	105,000	120,000
Production overhead	54,000	58,000	62,000
Other overhead	40,000	40,000	40,000
Total cost	<u>304,000</u>	<u>343,000</u>	<u>382,000</u>

What would be the total cost in a budget that is flexed at the 77% level of activity?

- A. £330,300  
 B. £370,300  
 C. £373,300  
 D. £377,300
18. Within decentralised organisations there may be cost centres, investment centres and profit centres. Which of the following statements is true?
- A. Cost centres have a higher degree of autonomy than profit centres  
 B. Investment centres have the highest degree of autonomy and cost centres the lowest  
 C. Investment centres have the lowest degree of autonomy  
 D. Profit centres have the highest degree of autonomy and cost centres the lowest
19. A manager of a trading division of a large company has complete discretion over the purchase and use of non-current assets and inventories. Head Office keeps a central bank account, collecting all cash from receivables and paying all suppliers. The division is charged a management fee for these services. The performance of the manager of the division is assessed on the basis of her controllable residual income. The company requires a rate of return of 'R'. Using the following symbols:

Divisional non-current assets	F
Divisional working capital	
Receivables	D
Inventory	S
Payables	(L)
	<u>W</u>
Divisional net assets	<u>Z</u>
Divisional profit	P
Head office management charges	(M)
Divisional net profit	<u>N</u>

Which of the following is the correct formula for calculating the controllable residual income of the division?

- A.  $P - [(F + S) \times R]$   
 B.  $N - [(F + S) \times R]$   
 C.  $N - (Z \times R)$   
 D.  $P - (Z \times R)$

20. To reconcile the budgeted contribution to the actual contribution, which of the following must be accounted for?
- All sales variances and all marginal cost variances.
  - All sales variances.
  - All marginal cost variances.
  - Neither sales nor marginal cost variances.
21. When absorbing variable overheads on the basis of machine hours, the total variable overhead variance can be ascertained by comparing actual variable overheads in a period with the product of the absorption rate and which of the following?
- (Planned output) × (Standard machine hours per unit)
  - (Actual output) × (Actual machine hours per unit)
  - (Planned output) × (Actual machine hours per unit)
  - (Actual output) × (Standard machine hours per unit)
22. The following is extracted from Proteus Ltd's monthly management reporting:

Performance report for October			
			£
Budgeted contribution (10,000 units)			172,000
<i>Variances</i>	<i>Adverse</i>	<i>Favourable</i>	
	£	£	
Labour rate	3,600		
Labour efficiency		8,000	
Material price	10,800		
Material usage		4,800	
	<u>14,400</u>	<u>12,800</u>	<u>(1,600)</u>
Actual contribution (10,000 units)			<u>170,400</u>

The purchasing manager decided to buy a superior quality material that was more expensive than the standard material for use in October. This superior material gives rise to less waste. Labour was able to convert this superior material into the final product in less than the standard time. Also impacting on the results, however, was a wage rise, agreed in July, which was implemented at the beginning of October.

The decision to purchase the superior quality materials caused the profit in October to change. Select which of the following best describes that change.

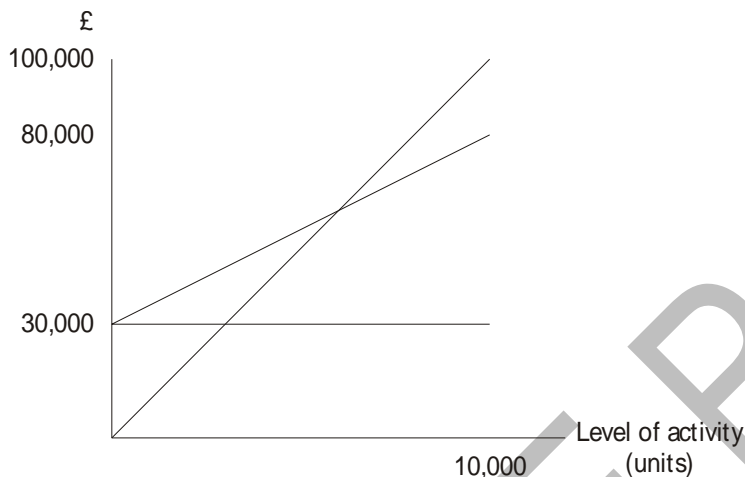
- Fall by £1,600
- Rise by £4,800
- Fall by £6,000
- Rise by £2,000

23. The Finance Assistant from Castle Associates has recently returned from a management accounting seminar at which she was introduced to some new management accounting terms and formulae. She has now got several of the terms and formulae mixed up in her mind.

The contribution required to breakeven is best given by which of the following?

- A. Unit selling price less unit variable cost.
- B. Unit contribution x number of units sold.
- C. Total fixed costs.
- D. Total fixed costs/contribution ratio.

24.



The above breakeven chart has been drawn for a company's single product. Which of the following statements about the product are correct?

- (i) The product's selling price is £10 per unit.
  - (ii) The product's variable cost is £8 per unit.
  - (iii) The product incurs fixed costs of £30,000 per period.
  - (iv) The product earns a profit of £70,000 at a level of activity of 10,000 units.
- A. (i), (ii) and (iii) only
  - B. (i) and (iii) only
  - C. (i), (iii) and (iv) only
  - D. (iii) and (iv) only

25. Green Ltd manufactures two components, the Alpha and the Beta, using the same machines for each. The budget for next year requires the production of 4,000 units of each component. The variable production cost per component is as follows:

	<i>Machine hours per unit</i>	<i>Variable production cost (£ per unit)</i>
Alpha	3	20
Beta	2	36

Only 16,000 machine hours will be available next year. A sub-contractor has quoted the following unit prices to supply components: Alpha £29; Beta £40.

The optimum plan to obtain the components required is:

	<i>Component Alpha</i>		<i>Component Beta</i>	
	<i>Produce</i>	<i>Purchase from sub-contractor</i>	<i>Produce</i>	<i>Purchase from sub-contractor</i>
	Units	Units	Units	Units
A.	0	4,000	0	4,000
B.	2,000	2,000	0	4,000
C.	2,666	1,334	4,000	0
D.	4,000	0	2,000	2,000

26. A company has only 6,000 kg of an irreplaceable raw material called Grunch. Grunch can be used to make three possible products X, Y and Z, details of which are given below:

	X	Y	Z
Maximum demand (units)	4,000	3,000	5,000
Constant unit selling price (£/unit)	£3.00	£4.00	£5.00
Constant unit variable cost (£/unit)	£1.50	£2.40	£2.60
Fixed costs (£/unit)	£1.80	£2.20	£2.40
Quantity of raw material Grunch to make one unit of product (kg)	0.30	0.40	0.80

If the company's objective is to maximise profit, which of the following production schedules should be chosen?

	X	Y	Z
	Units	Units	Units
A.	2,666	3,000	5,000
B.	4,000	3,000	5,000
C.	4,000	2,000	5,000
D.	4,000	3,000	4,500

27. A project analyst has just completed the following evaluation of a project which has an initial cash outflow followed by several years of cash inflows:

Internal rate of return (IRR)	15% pa
Discounted payback period (DPP)	7 years

She then realises that the company's annual cost of capital is 12% not 10% and revises her calculations.

Select the option for what will happen to each of the IRR and DPP figures when the calculations are revised.

**IRR**

- A. No change
- B. Increase
- C. Decrease

**DPP**

- D. No change
- E. Increase
- F. Decrease

28. For a project with an initial cash outflow followed by a series of positive future cash inflows where the internal rate of return is unique and the net present value is positive at the opportunity cost of capital, indicate which of the following statements is true.
- A. The internal rate of return is always greater than the opportunity cost of capital.
  - B. The internal rate of return is sometimes lower than the opportunity cost of capital.
  - C. The internal rate of return is always lower than the opportunity cost of capital.
  - D. The internal rate of return is sometimes greater than the opportunity cost of capital.

29. A company has identified three independent projects, X, Y and Z. It has estimated the cash flows and positive internal rates of return (IRRs) as follows:

Year	Project X £	Project Y £	Project Z £
0	(25,000)	82,000	(50,000)
1	—	(20,000)	127,500
2	—	(20,000)	(78,750)
3	20,000	(20,000)	—
4	40,000	(20,000)	—
5	(27,938)	(20,000)	—
IRRs	10%	7%	5% and 50%

If the three projects are of equivalent risk and the company aims to maximise shareholder wealth, at which of the following costs of capital would all three projects be deemed to be acceptable by the company?

- A. 12%  
 B. 8%  
 C. 6%  
 D. 4%
30. A company is to spend £60,000 on a machine that will have an economic life of ten years and no residual value. Depreciation is to be charged using the straight-line method. Estimated operating cash flows are:

Year	£
1	– 2,000
2	+ 13,000
3	+ 20,000
4–6	+ 25,000 each year
7–10	+ 30,000 each year

What is the average accounting rate of return (ARR), calculated as average annual profits divided by the average investment?

- A. 75%  
 B. 55%  
 C. 38%  
 D. 28%

31. A project has an initial investment cost of £200,000. It is expected to generate a net cash inflow of £20,000 at the end of its first year. This will rise to £25,000 at the end of the second year and remain at £25,000 per annum in perpetuity. The relevant cost of capital is expected to be 8% in the first year and 10% in the second and subsequent years.

What is the net present value of the project (to the nearest £100).

- A. £29,000
- B. £45,800
- C. £50,000
- D. £68,500

32. A project can be expected to generate ten annual cash inflows of £30,000 starting immediately. The project requires an initial cash outlay of £150,000 and a final cash outlay at the end of ten years of £50,000.

If the annual cost of capital is 10%, what is the net present value of the project (to the nearest £100).

- A. £15,100
- B. £23,500
- C. £31,600
- D. £33,500

## MARK PLAN AND EXAMINER'S COMMENTARY

Allocate and apportion the budgeted overheads to the four departments:

	Assembl y	Finishing	Stores	Maintenanc e	marks	workings
Rent and rates (£)	16,000	32,000	24,000	8,000	0.5 each	2:4:3:1
Plant depreciation (£)	25,000	60,000	7,500	7,500	0.5 each	25:60:7.5:7.5
Light and heat (£)	10,000	20,000	15,000	5,000	0.5 each	2:4:3:1
Canteen costs (£)	17,000	34,000	17,000	17,000	0.5 each	1:2:1:1
Finishing costs (£)	0 or -	32,000	0 or -	0 or -	2	Direct allocation

Reapportion the service department overheads (Stores and Maintenance) to the production departments (Assembly and Finishing):

	Assembl y	Finishin g	Store s	Maintenanc e	marks	workings
Total overhead (£)	70,000	185,000	65,000	38,000		
Stores reapportionment (£)	32,500	13,000	-65,000	19,500	1.5 marks for -65000 0.5 marks each for other 3 positive figs (3 total)	5 : 2 : 3
Revised total overheads (£) (enter figures in all 4 boxes)	102,500	198,000	0	57,500	Only score 1 for a zero in stores column	
Maintenance reapportionment (£)	16,912 (or 16,911)	40,588 (or 40,589)	0	-57,500	1 mark for correct answer in each of A and F (max 2 in total)	25:60
Revised total	119,412	238,588	0	0	Only	



overheads (£)  
(enter figures  
in all 4 boxes)

(or  
119,411)

(or  
238,589)

score  
0.5+0.5  
for a  
zero in S  
and M  
columns

**Calculate the budgeted overhead absorption rate per labour hour in Finishing:**

£12

**1 mark**

243,000/20,250

**Calculate the under or over absorption of overheads in Assembly:**

£7,008

**1 mark for £7008** (15,876-  
15,000)x8

Over absorption

**1 mark for over**

LO1c

1. C Threat of disciplinary proceedings or dismissal over a disagreement about the application of accounting principle or the way in which financial information is to be reported is an example of an intimidation threat.

LO 5a

2. B Because the demand for Rex is more than sufficient for division F to manufacture to capacity, the price that the product should be transferred to division G should represent the same profit margin as if the product were sold externally. The external selling price is £64 but if an external sale is made then additional selling overhead of £8 would be incurred. The net transfer price is therefore £56.

The £64 price doesn't reflect the saving in selling costs. £40 and £48 give lower profit margins for the producing division F, hence they would want to sell outside.

LO 1f

3. B Total cost = 65,000 + (3 x quantity)

		£
Highest production	3,000 units	74,000
Lowest production	1,500 units	69,500
	<u>1,500</u>	<u>4,500</u>

Variable cost per unit = £4,500/1,500 = £3 per unit  
 Total cost = fixed cost + (£3 x quantity)  
 £74,000 = fixed cost + (£3 x 3,000)  
 Fixed cost = £74,000 - £9,000  
 = £65,000

LO 2a

4. A, B A forecast is a prediction by management of the expected outcome whereas a budget represents a set of targets of what management intend to happen. A budget is usually set just once a year whereas forecasts and re-forecasts can be carried out much more frequently.

The statement '*All budgets are prepared in financial terms*' is incorrect as often a budget could include, for example, tonnage of raw material needed or quantity (in units) of finished product.

The statement '*The master budget consists of a budgeted income statement and a budgeted balance sheet*' is incorrect as a master budget would also contain a cash flow budget.

The statement '*A flexible budget adjusts both fixed and variable costs for the level of activity*' is incorrect as a flexible budget adjusts just variable costs for the level of activity and not fixed costs.

LO 2c

5. A Zero-based budgeting, by its very definition, starts from zero and is built upwards.

The statement '*a zero variance between budgeted and actual overhead*' is incorrect as this merely refers to the comparison of actual performance with budgeted performance.

The statement '*an assumed sales level of zero as the starting point for budgeting the coming year's overheads*' is a meaningless statement as an overhead budget would be based on budgeted sales not zero sales.

The statement '*an overhead budget of zero*' is incorrect.

LO 2c

6. A The high-low method of cost estimation is a method of linear extrapolation or interpolation between two actual data points. It is a method for flexing a budget by calculating the budgeted cost for the actual activity.

The high-low method uses the highest and lowest costs in the budget period for the extrapolation process itself.

The measurement of actual cost for the budgeted activity is irrelevant.

The high-low method estimates a single cost at a certain level of activity and not a range of costs.

LO 2a

7. A Month 4 materials cost included within cost of sales is  $£116,000 \times 40\% = £46,400$ . Inventory of materials are budgeted to reduce from £22,000 to £12,000 and therefore budgeted materials purchased in the month would be  $(£46,400 + £12,000 - £22,000) = £36,400$ .

£46,400 (see above) represents the materials cost of sales rather than purchases.  
 $£46,400 - £12,000 + £22,000 = £56,400$  incorrectly deducts closing inventory and adds the opening.  $40\% (£116,000 + £12,000 - £22,000) = £42,400$  incorrectly applies the 40% adjustment to the materials inventory figures.

LO 2b

8. B As sales are increasing at 20% per month the expected sales for February are  $£120,000 \times 120\% = £144,000$ . As the gross margin is 30% on sales the cost of sales for February is expected to be  $£144,000 \times 70\% = £100,800$ .

The company policy is to maintain closing inventory at 10% of the expected next month's sales. The closing inventory for January is therefore £10,080. The cost of a unit is  $£2 \times 70\% = £1.40$ , meaning the closing inventory for January is  $£10,080 / £1.40 = 7,200$  units.

The budgeted cost of production for January would therefore need to cover January sales ( $£120,000 / £2$  per unit = 60,000 units) plus an increase in inventory from 6,000 to 7,200 units, ie a total of 61,200 units. This is a cost of  $61,200 \times £1.40 = £85,680$ .

If you incorrectly calculated the cost of production as £84,000 then you calculated the production volume as 60,000 units (the number sold in January) and did not allow for an increase in inventory levels.

If you incorrectly calculated the cost of production as £120,000 then you again calculated the production volume as 60,000 units in error and made a further error in valuing this volume at the selling price of £2 per unit rather than the cost price.

If you incorrectly calculated the cost of production as £122,400 then you correctly calculated the production volume as 61,200 units but in error valued this volume at the selling price of £2 per unit rather than the cost price.

LO 2b

9. B Buy back the company's shares

C Increase payables by delaying payments to suppliers

Buying back the company's shares would be a suitable use of a long-term surplus (but not short-term), by returning surplus cash to the shareholders.

Increasing payables would increase the surplus still further because additional credit would be taken from suppliers.

LO 2g

10. A The inventory value is £2,100. The rate of inventory turnover is 10 times p.a., therefore the annual cost of sales is £21,000 (we are told opening inventory equals closing inventory). The gross profit margin is 30% which means annual sales are  $£21,000/0.7 = £30,000$ .

The receivables collection period is 1 month, which means closing receivables are  $£30,000/12 = £2,500$ .

The payables payment period is 1.6 months, which means closing payables are  $£21,000/12 \times 1.6 = £2,800$ .

The quick ratio is 2:1 which means current assets (excluding inventory) are  $£2,800 \times 2 = £5,600$ . As receivables are £2,500 the cash balance must be  $(£5,600 - £2,500) = £3,100$ .

If you calculated incorrectly the cash balance as £1,000 then you probably incorrectly calculated closing payables as  $£21,000/12 = £1,750$  which would mean current assets (excluding inventory) of £3,500 and cash of  $(£3,500 - £2,500) = £1,000$ .

If you calculated incorrectly the cash balance as £100 then you probably incorrectly calculated closing receivables as  $£2,100/12/0.7 = £250$  and closing payables as  $£2,100/12 = £175$  and therefore current assets (excluding inventory) of £350.

LO 2d

11. C The company's cash operating cycle is calculated as:

(Inventory days + receivables days – payables days)

Inventory days =  $£490,000/£4,500,000 \times 365 = 39.7$  days

Receivables days =  $£610,000/(£4,500,000/0.68) \times 365 = 33.6$  days

Payables days =  $£340,000/£4,660,000 \times 365 = 26.6$  days

**Note:** The cost of sales value is used for the inventory days and also to calculate sales (using the gross margin of 32%). However, the purchases figure is used to calculate the payables days.

The answer is therefore  $(39.7 + 33.6 - 26.6)$  days = 46.7 days (rounded to 47).

If you incorrectly calculated the answer as 34 days then you probably rounded up the inventory days to 40 days, added the payables days in error (also rounded up at 27 days) and then deducted the receivables days (rounded down to 33 days).

If you incorrectly calculated the answer as 44 days then you probably used the purchases figure of £4,660,000 in the calculations for inventory days and receivables days rather than the cost of sales figure.

If you incorrectly calculated the answer as 51 days you probably calculated the inventory days and payables days correctly but used the wrong gross margin to calculate the sales figure in the receivables days formula (using 22% margin rather than 32%).

LO 2e

12. A, C, F  
Cost per order (£180) – Included  
Carrying cost per unit per month (£2) – Included  
Purchase price per unit (£4) – Not included

In the formula,  $c$  = the cost of placing one order;  $d$  = the estimated usage of an inventory item over a particular period; and  $h$  = the cost of holding one unit of inventory for that period. The purchase price per unit is not a constituent part of the formula.

LO 2f

13. D Budgets and standards  
To exercise control, managers must compare actual performance with budgets and standards.

The term 'feedback' describes the whole process of reporting control information to management and might also refer to the control information itself.

Information about fixed costs and activity levels might be included with the control information but they are not a separate element of the control cycle itself.

LO 3c

14. C Distributed to as many managers as possible

Reports should be communicated to the manager who has responsibility and authority to act on the information. There is no point in distributing reports to managers who cannot act on the information contained therein.

In this situation managers could suffer from information overload where they are supplied with so much information that their attention is not drawn clearly to that which is specifically relevant to them. Important information could be overlooked or simply ignored.

LO 3d

15. C £328 adverse

**Material price variance**

	£
8,200 kg did cost	6,888
But should have cost (x £0.80)	6,560
	<u>328(A)</u>

If you calculated the variance to be £286 you based your calculations on the materials issued to production. However, the material inventory account is **maintained at standard cost**, therefore the material price variance is **calculated when the materials are purchased**. If you selected £328 favourable you calculated the size of the variance correctly but you misinterpreted it as favourable.

LO 3e

16. B £152 adverse

870 units did use	7,150 kg
But should have used (x 8 kg)	<u>6,960 kg</u>
Usage variance in kg	<u>190(A)</u>
Usage variance in £ = (190 kg x standard price per kg £0.80)	<u>£152 A</u>

If you selected £152 favourable you calculated the size of the variance correctly but you misinterpreted it as favourable.

If you selected £159.60 adverse you evaluated the usage variance in kg at the actual price per kg, instead of the standard price per kg.

The result of £280 adverse bases the calculation of standard usage on the budgeted production of 850 units. This is not comparing like with like. The comparison should be based on a flexed budget for the actual production level.

LO 3e

17. B £370,300

Variable material cost per 1% activity =	£2,000
Variable labour cost per 1% activity	£1,500

<b>Production overhead</b>	£
At 60% activity	54,000
At 80% activity	62,000
Change <u>20%</u>	<u>8,000</u>

Variable cost per 1% change in activity is (£8,000 / 20) = £400

Substituting in 80% activity	£
Variable cost = 80 x £400	32,000
Total cost	62,000
Therefore fixed cost	<u>30,000</u>

Other overhead is a wholly fixed cost.

**Budget flexed at 77% level of activity**

	£'000
Variable material 77 x £2,000	154.0
Variable labour 77 x £1,500	115.5
Production overhead	
Variable 77 x £400	30.8
Fixed	30.0
Other overhead	40.0
	<u>370.3</u>

If you selected £330,300 you did not include a fixed cost allowance for the other overhead. The option of £373,300 ignores the fact that production overhead is a semi-variable cost and the option of £377,300 simply multiplies the total cost for 70% activity by a factor of 1.1. This makes no allowance for the fact that there is an element of fixed costs within production overhead, and other overhead is wholly fixed.

LO 3e

18. B Cost centres have the lowest degree of autonomy with managers only able to control costs. Profit centres have a higher degree of autonomy as managers can not only control costs but can also control sales prices and revenue. Investment centres have the highest degree of autonomy as managers can not only control costs and revenues but can also make investment decisions not open to managers in either of the other two centres.

LO 3a

19. A Controllable residual income is defined as controllable profit less the 'cost of capital' utilised in the business, to the extent that capital is controllable.

Controllable profit is not N (as management cannot control the head office management charges) but is P.

The cost of capital will be R multiplied by the controllable capital. As head office collects cash from receivables and pays suppliers then D and L do not form part of controllable

capital. The division has complete control over non-current assets (F) and inventory (S) and therefore controllable capital is (F + S). The 'cost of capital' is therefore (F + S) × R.

The controllable residual income is therefore  $P - [(F + S) \times R]$

If you selected the formula  $N - [(F + S) \times R]$  then you correctly excluded the non-controllable receivables and payables balances but you included the non-controllable head office management charges.

If you selected the formula  $P - (Z \times R)$  then you incorrectly included the non-controllable receivables and payables balances.

If you selected the formula  $N - (Z \times R)$  then as well as incorrectly including the non-controllable receivables and payables balances you included the non-controllable head office management charges.

LO 3b

20. A All sales variances and all marginal cost variances.

Budgeted contribution is different from actual contribution because of all of the sales and marginal cost variances which have arisen.

LO 3e

21. D Absorption costing always uses the budgeted (or standard) production time, as flexed by the actual output in a period. This means that the **actual** output is multiplied by the **standard** machine hours per unit in order to establish a flexed budget of machine hours for the actual production. The value of overheads absorbed would therefore be the absorption rate multiplied by this flexed budget.

If you selected (planned output) × (standard machine hours per unit) then the result would be the budgeted level of absorbed overhead rather than the actual absorbed overhead.

If you selected (actual output) × (actual machine hours per unit) then the result would include any production efficiencies or inefficiencies in the actual machine hours and this would result in an incorrect calculation of absorbed overhead.

If you selected (planned output) × (actual machine hours per unit) then you have reversed the selections you should have made.

LO 3e



22. D The first important consideration is to ignore the effect of the wage rise, because this did not arise because of the decision to procure the superior quality material. The adverse labour rate variance should therefore be discounted.

The favourable material usage variance arose because the superior material generated less waste. However, the superior material was more expensive leading to the adverse material price variance, and also could be converted by the workforce more efficiently, leading to the favourable labour efficiency variance.

The answer is therefore  $8,000F + 4,800F - 10,800A = 2,000F$ . A favourable cost variance means that profits will rise.

If you selected a rise of £4,800 then you incorrectly ignored the labour efficiency and material price variances.

If you selected a fall of £1,600 then you incorrectly also included the adverse labour rate variance of £3,600.

If you selected a fall of £6,000 then you included the material price and usage variances but incorrectly ignored the favourable labour efficiency variance.

LO 3f

23. C Total fixed costs

Contribution required to break even is the same value as total fixed costs.

Unit selling price less unit variable cost is the unit contribution.

Unit contribution x number of units sold is the total contribution.

Total fixed costs/Contribution ratio provides the sales revenue at breakeven point.

LO 4a

24. B (i) and (iii) only

Statement (i) is correct. The line which passes through the origin indicates the sales revenue at various levels of activity. At an activity level of 10,000 units, the sales revenue is £100,000 therefore the selling price is £10 per unit.

Statement (ii) is incorrect. The sloping line which intercepts the vertical axis at £30,000 shows the total cost at various levels of activity. The **total cost** for 10,000 units is £80,000, from which we subtract the £30,000 fixed costs to derive the variable cost of 10,000 units, which is £50,000. Therefore the variable cost per unit is £5.

Statement (iii) is correct. The fixed cost is the cost incurred at zero activity and is shown as a horizontal line at £30,000.

Statement (iv) is incorrect. The profit for 10,000 units is the difference between the sales value (£100,000) and the total cost (£80,000) which amounts to £20,000.

LO 4b

25. D Alpha: Produce 4,000 units

Beta: Produce 2,000 units, Buy in 2,000 units

The units subcontracted should be those which add least to the costs of Green Ltd. The cheapest policy is to subcontract work which adds the least extra cost per machine hour saved.

	<i>Alpha</i>	<i>Beta</i>
	£	£
Variable cost of internal manufacture	20	36
Variable cost of buying	29	40
Extra variable cost of buying	<u>9</u>	<u>4</u>
Machine hours saved by buying	3 hours	2 hours
Extra cost of buying, per hour saved	£3	£2

It is cheaper to buy Betas than to buy Alphas. Therefore the priority for making the components in-house will be to allocate the available hours to the manufacture of Alphas.

<i>Component</i>	<i>Production Units</i>	<i>Hours per unit</i>	<i>Hours allocated</i>
Alpha	4,000	3	12,000
Beta	2,000	2	4,000
			<u>16,000</u>

The remaining 2,000 units of Beta should be purchased from the sub-contractor.

LO 4b

26. D This question relates to limiting factor analysis. The key to these questions is ranking the contribution per unit of the limiting factor, in this case Grunch. In this question the contribution per unit of Grunch will be calculated pre-fixed costs, as these will be constant whatever production schedule is chosen.

Product X: Contribution = £1.50 and  $£1.50/0.3 = £5$  contribution per kg of Grunch

Product Y: Contribution = £1.60 and  $£1.60/0.40 = £4$  contribution per kg of Grunch

Product Z: Contribution = £2.40 and  $£2.40/0.80 = £3$  contribution per kg of Grunch

The ranking of the products is therefore X, Y, Z.

The production schedule that will maximise profit will therefore be:

4,000 units of X (maximum demand), utilising  $4,000 \times 0.3\text{kg}$  of Grunch, ie 1,200kg

3,000 units of Y (maximum demand), utilising  $3,000 \times 0.4\text{kg}$  of Grunch, ie 1,200kg

This is a total of 2,400kg and therefore 3,600kg of the 6,000kg will be available to manufacture Product Z. This will produce  $3,600/0.8$  units = 4,500 units.

Any other production schedule will not maximise profit.

LO 4b

27. A, E A project's IRR is the return at which the net present value (NPV) of the cash flows is zero. The IRR is therefore independent of a company's cost of capital. The revision to the cost of capital by the project analyst will therefore not impact on the IRR, hence there is **no change**.

A project's DPP is the period of time taken for the project's cumulative discounted cash flows to turn from the initial negative outflow to a cumulative positive position. The revision to the cost of capital from 10% to 12% will reduce each future discounted cash inflow, and therefore **increase** the time taken for the cumulative discounted cash flows to become positive.

LO 4c

28. A As the net present value of the project's cash flows is positive at the opportunity cost of capital, this means that the project is viable and its IRR must be higher than the cost of capital.

If the internal rate of return of a project were sometimes lower than the opportunity cost of capital then the net present value in those instances would be negative.

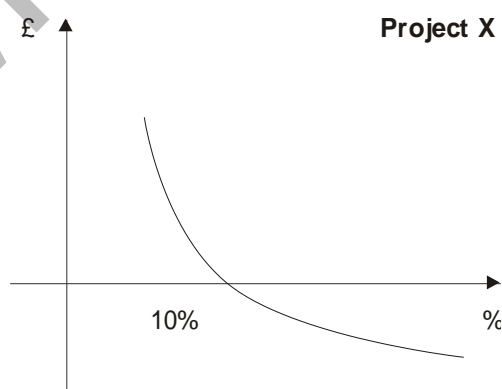
If the internal rate of return were always lower than the opportunity cost of capital then the net present value would always be negative.

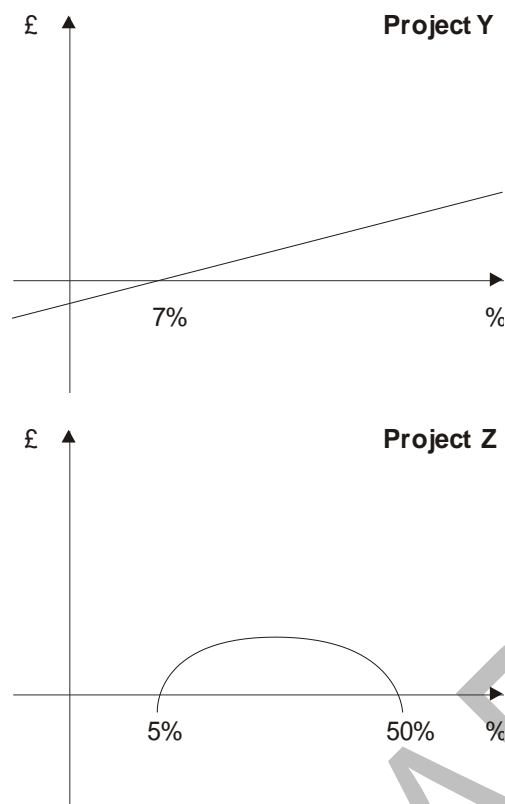
If the internal rate of return of a project were sometimes higher than the opportunity cost of capital then this would imply that sometimes it would be lower.

LO 4d

29. B The best way to attempt this question is to draw graphs of the net present value of each project at various discount rates. The IRR of each project tells us at what point the x-axis is crossed and the number of changes in sign of the cash flows (from positive to negative or vice versa) tells us how many changes in direction each graph will have. The starting sign (positive or negative) for the graph can be easily established at a discount factor of 0% by adding the cash flows up.

The graphs of net present values for Projects X, Y and Z must look like this:





The answer is 8% because at a discount factor of 8% the NPV of project X is positive (accepted), project Y is also positive (accepted) and project Z is also positive (accepted).

Examining the other discount factors shows that:

At a discount factor of 12% the NPV of project X is negative (rejected), project Y is positive (accepted) as is project Z.

At a discount factor of 6% the NPV of project X is positive (accepted), project Y is negative (rejected) and project Z is positive (accepted).

At a discount factor of 4% the NPV of project X is positive (accepted), project Y is negative (rejected) and project Z is also negative (rejected).

LO 4c

30. B The ARR in this question is defined as average annual profits divided by the average investment.

In Year 1 profits are –£2,000 less depreciation of (£60,000/10), ie –£8,000

In Year 2 profits are £13,000 less depreciation of £6,000, ie £7,000

In Year 3 profits are £20,000 less depreciation of £6,000, ie £14,000

In Year 4 to 6 profits are £25,000 less depreciation of £6,000, ie £19,000

In Year 7 to 10 profits are £30,000 less depreciation of £6,000, ie £24,000

The average profits are therefore:

$$(-8,000 + 7,000 + 14,000 + (19,000 \times 3) + (24,000 \times 4))/10 = £166,000/10 = £16,600$$

The investment in Year 1 is £60,000 and the investment in Year 10 is £nil. The average investment is therefore  $(£60,000)/2 = £30,000$

The ARR is therefore  $£16,600/£30,000 = 55\%$

The average cash flow (rather than profit) =  $(16,600 + \frac{60,000}{10}) = £22,600$

$£22,600 \div £30,000 = 75\%$

$£16,600 \div £60,000 = 28\%$  i.e. incorrect using the initial investment

$£22,600 \div £60,000 = 38\%$ , i.e. incorrect using the initial investment and average cash flow  
LO 4c

31. C The cash flows for the project are:

$T_0$  -£200,000

$T_1$  +£20,000

$T_2$  +£25,000 and each year thereafter

The  $T_0$  outflow is not discounted.

The  $T_1$  inflow is discounted for one year at 8%, giving a NPV of  $£20,000/(1.08) = £18,519$

Thereafter we have a perpetuity at a discount rate of 10% starting after one year. The perpetuity factor is  $1/0.1 = 10$ , and therefore the NPV is  $£25,000 \times 10/1.08 = £231,481$ .

The NPV of the project is therefore  $(-£200,000 + £18,519 + £231,481) = £50,000$

B Incorrectly discounting the perpetuity back from  $T_1$  at 10% (rather than 8%) gives

$£25,000 \times 10/1.1 = £227,273 + £18,519 - £200,000 =$   
 $£45,792$  i.e. £45,800

Discounting the perpetuity as  $\frac{£25,000 \times 10}{1.1 \times 1.08} = £210,438$

$+ £18,519 - £200,000 = £28,957$  i.e. £29,000

LO 4c

32. D As the ten annual inflows start immediately then in Year 0 the net outflow is actually -  
 $£150,000 + £30,000 = -£120,000$ .

The NPV of this initial outflow is  $-£120,000$ .

The NPV of the nine remaining annual cash inflows (years 1 to 9) of £30,000 each can be found from the discount tables by taking the annuity factor for years 1 to 9 at 10%. This is 5.759. Therefore the NPV of these cash inflows is  $£30,000 \times 5.759 = £172,770$ .

The NPV of the outlay at the end of ten years is  $-£50,000 \times 0.386 = -£19,300$ .

The project NPV is therefore  $(-£120,000 + £172,770 - £19,300) = £33,470$  or £33,500 to the nearest £100.

If you incorrectly calculated the NPV as £15,100 (to the nearest £100) then you treated the ten annual inflows as being received in Years 1 to 10 rather than Years 0 to 9. This meant you calculated the NPV as  $-£150,000 + £30,000 \times 6.145 - £19,300 = £15,050$ .

If you incorrectly calculated the NPV as £31,600 (to the nearest £100) then you probably completed every calculation correctly except the discounting of the final £50,000. You probably used a discount factor of 0.424 rather than 0.386 meaning the NPV became £31,570 (£31,600 to the nearest £100).

LO 4c

SAMPLE PAPER